

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
CORPUS CHRISTI DIVISION

STEVEN T. VETTERS, INDIVIDUALLY §
AND AS REPRESENTATIVE OF THE §
ESTATE OF SHARON G. VETTERS, §
DECEASED, FOR AND ON BEHALF §
ALL THOSE ENTITLED TO RECOVER §
FOR THE DEATH OF SHARON G. §
VETTERS UNDER THE TEXAS §
WRONGFUL DEATH AND SURVIVAL §
ACTS, ERIN VETTERS RUEL, §
STEVEN B. VETTERS, §
JOHN W. STOCKTON, §
AND HAZEL L. STOCKTON §
Plaintiffs §

CIVIL ACTION NO. 05-03

V. §

DAIMLERCHRYSLER CORPORATION §
Defendants. §

JURY

AFFIDAVIT OF JOHN M. STILSON

STATE OF TEXAS §
§
COUNTY OF NUECES §

John M. Stilson, having been first duly sworn under oath, deposes and states as follows:

1. My name is John M. Stilson. I am over the age of twenty-one, of sound mind and am competent to make this affidavit. I have personal knowledge of the facts contained herein, and they are true and correct.

2. I have been retained by Plaintiffs, Mr. Steven Vettters and his family, in the present case to conduct an independent investigation into the accident of December 10, 2004, in which Ms. Sharon Vettters sustained a severe personal injury, provide opinions and conclusions about the design and manufacturing of the 2002 Dodge Durango gear selection system in question upon my findings from the investigation, provide opinions

and conclusions regarding whether the gear selection system of the 2002 Dodge Durango is unreasonably dangerous and/or defective based upon the findings from my investigation, provide opinions and conclusions regarding possible design alternatives for the 2002 Dodge Durango gear selection system (including testing of an alternative design), and the knowledge of risk and knowledge of occupant protection systems of the automotive industry at the time Daimler Chrysler designed and manufactured the 2002 Dodge Durango in question. Attached hereto as Tab 1 and incorporated by reference herein as if set forth in full is a true and correct copy of the Accident Investigation Report that I prepared in this case. The factual statements made in my report are all within my personal knowledge (unless noted that they are based on the measurements, calculations, or opinions of other experts) and are true and correct. The factual statements made in exhibits attached to the report are all true and correct. The conclusions and opinions rendered in that report are all within a reasonable degree of engineering probability and based on accepted, established, and reliable techniques and methods that are used by design and test engineers in the automotive industry and normally relied upon by experts who practice in my field.

3. I have reviewed the Defendant Daimler Chrysler's Motion to Exclude the Testimony of Plaintiff's Expert John Stilson, and I submit this affidavit with attachments for the Court's review in response to Daimler Chrysler's motion. The documents referenced in the attached tabs Nos. 1-67 are incorporated by reference the same as if set forth herein. To assist the Court with locating a particular document, I have attached to my affidavit an **"Appendix of Evidence Attached for the Court's Review,"** referred to as "Appendix."

4. I have been the owner of Stilson Consulting for 23 years. Stilson Consulting is an independent consulting firm located in Wildwood, Illinois.

5. I am a degreed mechanical engineer. I earned a Bachelors of Science in Mechanical Engineering, University of Michigan, in 1967; Master of Science in Mechanical Engineering, University of Michigan, in 1969; and Master of Automotive Engineering, Chrysler Institute of Engineering, in 1969. I also hold certificates in accident reconstruction from the University of Wisconsin (1981) and the University of Georgetown, Washington D.C. (1990).

6. I worked as a product design and development engineer for Ford Motor Company ("FMC") and Chrysler Corporation in the period 1964-1981. I have been involved in accident investigation as an independent consulting engineer from 1981 to the present.

7. While employed as an automotive engineer, I was responsible, as a design release engineer, on the following vehicle systems: Body structure, hoods, roofs, front end structure, tailgates, doors, floor pans, reinforcement structure, door latches, window regulators, tailgate latches, hood latches, hood hinges, tailgate hinges, body mounts, tires, wheels, lug nuts, instrument panels, crash pads, and window retention systems.

8. While employed as an automotive engineer, I was responsible, as a test and development engineer, on the following vehicle systems: automatic transmissions, body mounts, engine dynamometer testing, carburetor testing, body structure testing, bumper impact testing, door retention system testing, vehicle interior trim and exterior trim testing, sliding door system testing, prop shaft testing, vehicle body hardware testing, wheel testing, tire testing, seat belt development and evaluation testing, tire FMVSS 127 testing, door latch retention FMVSS 206 testing, seat system testing, wheel lug nut testing, brake system testing, air bag testing, and vehicle test track testing .

9. As a design release and development engineer, I was responsible for subsystem test validation and performance, advance design coordination, product styling coordination, issuance of product assumption, cost studies, issuance of product engineering specifications, issuance of customer acceptance performance level specifications, product layout approval, product drawing release, product resolution, assembly feasibility prove-out, plant launch support, drive-team captain at launch, problem and warranty tracking, warning coordination and issuance, fleet vehicle problem resolution, cost tracking, cost reductions, Government Inquiry Coordination and Responses, safety research, customer complaint problem resolution, field problem resolution, system engineering, Failure Mode Effects Analysis, development and evaluation sign-off, vehicle development test tracking and quality assurance.

10. Attached hereto as Tab 2 is a true and correct copy of my *curriculum vitae* and a list of my testimony for the last four years, which is incorporated by reference herein as if set forth herein in full. Also, attached as Tab 3 is a summary of my qualifications for testifying in this matter for the Court's convenience. In my private practice as a consulting engineer, I have investigated the products listed in my *curriculum vitae*. These investigations have involved different systems and different model vehicles for automotive manufacturers including: Ford, General Motors, Chrysler (and DaimlerChrysler), Jeep, Nissan, AMC, Honda, Suzuki, Subaru, Fiat, BMW, Toyota, Peterbilt, White Motors, Freightliner, Clarke Equipment, Ford/New Holland, and others.

11. In the course of these investigations, I have conducted crashworthiness evaluations using vehicle system performance testing, vehicle-to-vehicle crash testing, sled testing, vehicle drop testing, laboratory component testing, pendulum impact

testing, brake system testing, FMVSS compliance testing procedures, and vehicle road testing.

12. Over the 15 years work experience in the automotive industry, and in the 23 years as an independent consultant, I have conducted failure analysis on automatic transmissions, seat belts, seating systems, fuel systems, brake systems, body construction, air bag systems, manual transmissions, steering systems, suspension systems, glazing, steering columns, instrument panels, and overall occupant constraint systems to evaluate their performance in complying with FMVSS standards, industry standards, and internal automotive standards.

13. I am a member of, among other organizations, American Society of Mechanical Engineers, Society of Automotive Engineers, and American Society of Safety Engineers.

14. In this particular case, I reviewed and relied upon not only my training, education, and practical experience in this particular field of expertise, but also the following:

- (1) the police report (tab 11);
- (2) photographs of the vehicle and the accident scene (tabs 46, 48, 49, 50, 51, 52, 66);
- (3) literature regarding, inspection and examination of the subject 2002 Dodge Durango (tabs 4, 20, 46, 48);
- (4) NHTSA investigations and Daimler Chrysler Recalls (tabs 13, 14);
- (5) various scientific and technical literature, some of which are referenced herein (tabs 10, 67);
- (6) Volumes of Daimler Chrysler and Ford Documents which among other things illustrate Daimler Chryslers awareness of the inadequacy of FMVSS and their internal specifications, the need to properly design the gear selection of passenger vehicles such as the Dodge Durango as well as Daimler Chrysler internal safety policies regarding the need to surpass FMVSS and their internal specifications with regard to the preventing

sudden, unexpected rearward movement of the Dodge Durango and other vehicles (tabs 10, 15, 17, 18, 19, 27, 31, 32, 35);

- (7) my report and supporting exhibits (tabs 1, 4, 9);
- (8) my notes and regarding the vehicle inspection and the gear selection system testing conducted for this case in particular as well as the testing of other Daimler Chrysler vehicles with automatic transmission (tabs 4, 46);
- (9) my disassembly of the subject vehicle gear selection system (tabs 4, 46); and
- (10) my testing and analysis of exemplar 2002 Dodge Durango automatic transmission, drawings, bucks and fixtures (tabs 5, 6, 39, 40, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63).

15. I am providing this affidavit to illustrate that I am more than qualified to render the opinions I state in my report and that my opinions have the indicia of reliability sufficient to satisfy this honorable Court's analysis.

16. Based upon the work I have done in this particular case, my training, experience, education, review of relevant documents and literature, I have been able to reach certain opinions and conclusions concerning specific defects in the 2002 Dodge Durango at issue; alternative designs of the gear selection system; alternative designs of the gear selection system, including properly functioning brake and ignition key interlocks, positive engaging shift detents, proper reverse hydraulic detent; the knowledge of the automotive industry at the pertinent time regarding the hazard of sudden, unexpected reverse gear engagement; and the selected Daimler Chrysler design process and the applied safety principles to provide occupant protection in a rollover. What follows is a fairly detailed accounting of industry knowledge concerning the defects in the subject 2002 Dodge Durango, a review of the methodology I utilized to arrive at my opinions, and a review of the established gear selection performance requirements I utilized in my testing. Once this honorable court is apprised of the factual basis for my opinions and test methodology, the allegations by the Defendant of,

“speculation”, “unsupported”, “unqualified”, and “unreliable” can be reduced to be baseless assertions.

17. In arriving at my opinions for this case, I have employed the concept of engineering judgment. Engineering judgment is the means whereby an engineer draws upon his experience and prior technical knowledge to evaluate and/or predict the performance characteristics of a vehicle and its systems. The automotive industry, complemented by the educational system, trains engineers to be capable of making engineering judgments related to product acceptance or failure without having to conduct product validation procedures on the initial decision process. Engineering judgment is used in the industry to evaluate product defects, certify product carried over from prior years, propose alternative designs, evaluate failure modes (A technique called Failure Mode Effects Analysis - FMEA), and many other purposes in making decisions during the design process. I used this method in the evaluation of vehicle systems I had direct design responsibility or was involved as a systems engineer while employed as an automotive engineer. Engineering judgment is an accepted, valid, and reliable method of analyzing system performance and is the basis of all system design and testing. The method relies on the education, training, experience and knowledge gained by designing, testing, and analyzing systems for vehicles. For example, Tab 22, which is a type of document reasonably relied upon by experts who practice in the fields of automotive and safety engineering, demonstrates application of engineering judgment. The application of engineering judgment is recognized, endorsed, and supported as an established means of vehicle performance assessment throughout the automotive industry. I used engineering judgment in every stage of my fifteen years of automotive industry work, and several product failure modes were identified from

several reporting sources when I worked for Chrysler Corporation and Ford Motor Company. *See* Tab 22.

18. Over the last forty years, I have utilized methods and techniques to evaluate vehicle and system performance that are accepted, valid and established within the industry and experts who practice in my field. I have used these methods and techniques in providing expert testimony in forty-eight of these United States. No court has ever found that my techniques and methodology were unreliable. More recently, allegations questioning my opinions have been presented to courts under the gate keeper role of the court. In every instance, the court concluded in favor of my qualifications and the reliability of my opinions within the designated areas of testimony and responsibility. *See* Tab 47.

19. In this accident, the driver operated the gear selection system designed by Daimler Chrysler and was exposed to sudden, unexpected rearward movement of the vehicle. There are several defective conditions in the gear selection system identified in the NHTSA investigations and by experts that explain why a vehicle will suddenly back up after the operator presumed it was in park gear. One of these defective conditions is called "false park" which is a position designed into the gear selection system. Since Daimler Chrysler designs the gear selection system using the minimum Federal Motor Vehicle Safety Standards (FMVSS) and Daimler Chrysler internal specifications do not address "false park", the gear selection system false park position is an inherent, intrinsic defective condition that exists by design intent. Safety research from the mid 1970's to the present has shown that gear selection systems designed with the false park condition will suddenly, unexpectedly shift into powered reverse due to the inherent defective condition. When this happens the vehicle will backup after the driver exits the

vehicle believing the gear selection system is in the park position. *See* Tabs 16, 17, 28, 29, 30.

20. This specific incident involves a single vehicle rearward movement after the driver exited the vehicle. My assignment in this case is to evaluate the safety of the subject vehicle in providing protection for the driver under the conditions of this accident. Daimler Chrysler marketed the 2002 Dodge Durango as a four door SUV model truck designed to carry both passengers and cargo. The frequency of single vehicle sudden, unexpected shifting into reverse has been reported in the data acquired by the automotive industry, NHTSA data acquisition from the FARS and NCSS national systems, and states government accident reporting data. The exposure of drivers and nearby persons to a risk of serious injury and death has been documented since the 1970 time frame as has the hazards associated with park to reverse accidents. The primary hazard that has been identified is the rearward moving vehicle making contact with a person. Significant to these accident data bases is the identification of a greater risk of vehicles backing up when previously identified defects exist on several vehicles with automatic transmission models. These vehicles have a known greater propensity to shift from "park" into reverse under these known conditions. *See* Tabs 8, 10, 12, 13, 14, 26.

21. One of the considerations I give in evaluating the performance of a vehicle in park to reverse accident concerns the accident conditions. The accident conditions establish the likelihood of how the vehicle backed up. The automotive industry generally takes the view of an unattended vehicle backing up as driver error. While this is a possibility, the fact remains that the inherent, latent defective conditions present on the vehicle are unknown by the general public. In fact, determination of the cause of an accident must also take into consideration the design and manufacturing of the vehicle's systems. Prior to making an engineering judgment on the cause of an accident,

I evaluate the accident and the particular manufacturers safety policy, design process, design specifications, historical vehicle data, field experience, recalls, technical service bulletins, subject vehicle history, NHTSA investigations, customer complaints, internal safety/design meetings, and knowledge/identification of hazards associated with the intended and reasonably foreseeable use of the vehicle. I then apply reliable, valid, and accepted scientific methodology and techniques to determine if the subject vehicle performed properly to provide reasonable safety under the conditions of the accident. The approach I take to evaluate the vehicle performance in an accident is accepted by the scientific community and is of a type reasonably relied upon by experts who practice in my field. *See* Tabs 1, 4, 5, 7, 9, 11.

**Safety Research In Support of the Methodology and Technique
Related to Opinions of a Defective Gear Selection System**

22. The subject 2002 Dodge Durango model evolved from the Chrysler Ram Utility Model, which was a short wheel base two door SUV. The “evolutionary” Dodge Durango was designed with a 42RFE automatic transmission also used on the Jeep Liberty, Dodge Ram pick up truck, and Dodge Dakota. The subject model 2002 Dodge Durango automatic transmission was completely redesigned from the 2000 Model Year based upon the Daimler Chrysler information. (*See* Tab 37, page 20, lines 15-25, page 21, lines 1-23). That means that Daimler Chrysler had an opportunity to design a safe gear selection system based upon their knowledge of previous recalls and NHTSA investigations of the false park defective condition. However, despite this knowledge, Daimler Chrysler ignored the knowledge and designed and manufactured the subject model automatic transmission with the identical inherent, latent false park defective condition. Daimler Chrysler does not deny that the false park condition is design intent

on the subject, just that it never is the reason for sudden, unexpected rearward movement of an unattended vehicle. *See* Tabs 8, 12, 13, 14, 26.

23. Protection from powered reverse rearward movement of an unattended vehicle is a recognized safety principle established through safety research, testing, NHTSA accident data, safety recalls, and NHTSA investigations. In other words, keeping the unattended vehicle from suddenly, unexpectedly backing up provides proper protection in a park to reverse accident. Preventing park to reverse condition is a known safety benefit to the motoring public. In general, the automotive industry is aware of the hazard of an unattended vehicle shifting from park to reverse, and has taken the safety position that it is the fault of the driver. This safety position has no benefit when the vehicle gear selection system has the inherent, latent false park and other defects (hydraulic bleed, malfunctioning brake interlock). There is no known safety benefit for the driver who believes the vehicle is in park, exits the vehicle, and when then it suddenly backs up. *See* Tabs 8, 12, 13, 14, 26.

24. In 1966, the Congress of the United States enacted the Safety Act of 1966 in response to increased serious injury and death occurring on public highways as a result of accidents. In response to the growing concern for safety of the motoring public, the Safety Act created the NHTSA safety agency under the US DOT and charged it with promulgating safety standards entitled FMVSS. The FMVSS were issued as minimum safety standards and were intended to be exceeded. Safety for the motoring public was defined as conditions of the vehicle that exposed them to an unreasonable risk of serious injury. As a result, NHTSA issued the FMVSS as minimum safety standards that addresses minimum safety for the motoring public. There is no FMVSS issued to regulate the automotive industry relative to the design of the automatic gear selection

system false park condition. That means that Daimler Chrysler establishes its own internal safety objectives for passenger safety in the design and operation of the gear selection system. *See* Tabs 35, 36.

25. In the 1960's and into the 70's, Ford, Chrysler, and GM research and safety engineers studied and tested production vehicles for costumer complaints concerning park to reverse accidents. The studies by Ford are extremely relevant, because most of these internal studies were revealed to the public in the NHTSA investigation titled C8-02. The result of these studies identified the false park defective condition and the risk of sudden, unexpected rearward movement of an unattended vehicle. There are literally thousands of documents provided to the NHTSA by Ford in the C8-02 investigation, and both Chrysler Corporation and General Motors Corporation were included in the investigation and even participated with the NHTSA in the evaluation of Ford Motor Company automatic transmission systems. In fact, Ford created a special Company Task Force to investigate and study the park to reverse problem. The hazard and defective condition of park to reverse was identified and well documented as a result of this investigation by the NHTSA. In addition, the reports established that the false park, reverse bleed, and lack of a positive detent gear selection system existed on all USA model automatic transmissions. *See* Tabs 8, 10, 12, 13, 14, 26.

26. In the 1975 time frame, the US DOT and NHTSA commenced an investigation into hundreds of complaints of park to reverse in Chrysler, Ford, and GM vehicles. This investigation involved studies by the automotive industry and NHTSA into the causes of park to reverse accidents. The studies included analysis of the gear selection system, accident date, human factors, consumer shifting habits, failure analysis, vehicle testing, and design alternatives. The NHTSA investigation covered Ford, GM, Chrysler, Japanese, and some European model vehicles. The automatic

transmissions studied in this time frame are substantially similar to the subject 45RFE model in this case. Ironically, Daimler Chrysler alleges, among other things, that my defect opinions are speculative and without basis, knowing that they have just recently conducted recalls on substantially similar SUV's for customer complaints of vehicle park to reverse along with the knowledge of the C8-02 investigation. Daimler Chrysler has never adopted a performance requirement for the vehicle false park gear selection condition. In truth, the criteria established by the NHTSA investigation for testing the false park condition has never been adopted by Daimler Chrysler in their design process. The bold accusation that my defect and causation opinions are mere speculation is false, and is supported by the knowledge Daimler Chrysler gained from NHTSA investigations into their automatic transmission systems. My opinions of defect and causation are sound, reliable, reasonable, and practical scientific principle to prevent the hazard of sudden, unexpected vehicle rearward movement. The underlying supporting information is of a type reasonably relied upon by experts who practice in my field. *See* Tabs 8, 10, 12, 13, 14, 26.

27. Daimler Chrysler alleges that the test methodology I have opined to evaluate gear selection system performance of the 2002 Dodge Durango is "speculative", "unsupported", and "irrelevant". In fact, the test methodology I have applied was adopted from the Ford Motor Company and NHTSA performance requirements set forth in the C8-02 investigation into park to reverse accidents. Ironically, the past and recent NHTSA investigations into Daimler Chrysler automatic transmissions revealed the false park defect exists on their products; however, Daimler Chrysler chooses to ignore the defective conditions and blames the driver for the accident. I did not arbitrarily establish the test methodology performance requirements, but have adopted the NHTSA and automotive industry established test procedures

using reliable, accepted, and valid techniques accepted by the scientific community. Equally important, is that Daimler Chrysler participated in the NHTSA investigation, and although they acknowledge that the false park condition exists, they do not admit that it is a defective condition that causes park to reverse accidents. In particular, my research and other expert research, has determined that as a result of the NHTSA C8-02 investigation, Ford completely redesigned their automatic transmissions to the basic design of GM automatic transmissions to make it less likely for the vehicle to suddenly back up in powered reverse, and instead, result in a vehicle roll away condition. This information is of a type reasonably relied upon by experts who practice in my field. *See* Tabs 1, 7, 8, 10.

28. In their motion to exclude my opinions, Daimler Chrysler attempted to mislead this honorable court that my qualifications lack experience in the design and manufacturing of automotive gear selection systems. I have been involved in investigating park to reverse accidents since 1981 as an independent consultant. In the span of 24 years of investigation, I have evaluated, tested, analyzed, and disassembled gear selection systems and studied the internal documents provided in discovery. In addition, I have previously been deposed and testified in trial on the defects and design alternatives to prevent the park to reverse condition of several vehicles. Daimler Chrysler ignores my work and experience over the past 24 years as an independent consultant on gear selection systems, which of course is an intentional and blatant attempt to reduce my work and experience to speculation. My qualifications and work experience are of a type accepted by the scientific community and the courts.

29. It is true that there are no witnesses to the fatal accident that occurred on December 10, 2004 when Ms. Veters was fatally injured. In the course of my investigation I have not been asked, nor have I not attempted to reconstruct the

accident. My investigation has determined that there are several defects that existed on the subject 2002 Dodge Durango that explain why the unattended vehicle could back up into the rest position at the accident scene. The fact that the defective conditions exist on the subject vehicle establishes a probability that they could have interacted in the cause of the subject vehicle backing up in powered reverse. Since there are a number of different defects associated with the design and manufacturing of the subject 2002 Dodge Durango gear selection system, it was necessary to consider how they interface with the actual incident. In my deposition I was asked by the defendant the most probable cause of the vehicle backing up, and I provided by most probable opinion based upon the facts. There is no speculation concerning certain agreed upon facts, but rather a disagreement over why the vehicle backed up. In this particular case, there are a number of explanations for how the vehicle backed up and fatally injured Ms. Vettters, but there are probable causes of why the subject vehicle backed up beyond simply blaming the incident on Ms. Vettters. My opinions address the probable causes of the vehicle backing up after Ms. Vettters exited it based upon all of the available information, my investigation, testing of the subject vehicle, testing of exemplar vehicle gear selection systems, failure analysis of the gear selection system, disassembly of the system, defective conditions that exist on the subject vehicle, and the NHTSA investigations into the causes of vehicle park to reverse accidents. This methodology is of a type reasonably relied upon by experts who practice in my field. See Tabs 1, 4, 7, 8, 10.

30. Another allegation in the Daimler Chrysler motion is that my opinion of the positioning of the gear selection system on the day of the incident is speculation and arbitrary. There is no question that at some time just before the incident Ms. Vettters positioned the gear selection system in reverse. The dispute over whether she also

positioned the gear selection in presumed park and exited the vehicle with the engine running is based upon the positioning of the vehicle on the driveway. Daimler Chrysler's explanation of Ms. Vetter's positioning the vehicle in the driveway and exiting with the gear selection position in reverse has no basis. And yet, they criticize my opinion as lacking proper basis and unreliable. The fact that the vehicle position on the driveway would require placing the vehicle in presumed park is not mere speculation, but a fact. Based upon reliable testing of the subject vehicle it will always back up in powered reverse unless there is some external obstruction behind the front or rear wheels that prevents it from doing so. The testing of the subject vehicle by Daimler Chrysler representatives at the accident scene uncovered only one position of the vehicle that could possibly prevent the vehicle from backing up, compared to multiple positions on the driveway where the vehicle must back up in powered reverse gear with the engine at idle. The facts of the incident and physical evidence support my opinion that the vehicle was not left in powered reverse gear on the driveway, but was left in a false park position that caused it to suddenly, unexpectedly back up in powered reverse whether due to self shifting or inadvertent contact with the unlocked shift lever by Ms. Vetter. These facts and the information are of a type reasonably relied upon by experts who practice in my field. *See* Tabs 11, 48, 65, 66.

31. Daimler Chrysler in their motion state that my opinion of positioning of the gear selection lever in the false park position is unreliable and mere speculation. There were studies conducted by Ford Motor Company and NHTSA on the human factors involved with shifting into different gears. My investigation revealed that the subject vehicle gear selector lever can in fact be positioned on the insert plate land designed by Daimler Chrysler between park and reverse. I have conducted hundreds of tests on vehicle gear selection systems for false park. The experience I gained from these

tests affords me the capability of determining whether the false park exists on the gear selection system. The methodology I use is based upon the procedures used by automotive representatives and other experts to evaluate the synchronization and operation of the gear selection system. There are several accepted and reliable tests of the gear selection system to evaluate the detent positions of the mechanical components. Each test requires a slow and deliberate motion of the gear selector lever to determine the detent positions in the column insert plate, the automatic transmission linear detent "rooster comb", and the park gear engagement. I explained in my deposition, that there are several reasons that have been identified for why drivers position the shift lever between reverse in park during a shift. These identified reasons include:

1. The gear selector lever has a designed in provision where the return spring is intended to automatically engage the selected column shift gate when the person releases the shift lever. In the course of moving the shift lever and releasing it to achieve the selected gear position there is nothing to prevent the lever from landing on the land between park and reverse. In this false park position, the engine idles in neutral, the transmission is disconnected, and on a level surface the vehicle will remain stationary which leads the person to believe they have placed the vehicle in park. In fact, the shift lever position is not in latched park, but will rest and remain on the false park land position. In addition, there is an increase shift lever effort felt due to the parking pawl in the transmission being blocked from engaging the parking gear. This increase in effort can create a false sense of achieving park gear.
2. The shift lever motion from reverse to park is halted by the design of a vertical notch in the column insert plate. As the operator shifts from reverse to park, the

shift lever will hit the vertical notch and “bounce back” the shift lever when it is released allowing it to be positioned on the land between park and reverse. There is nothing in the design of the gear shift selection system that prevents this from occurring.

These common reasons for the false park position were studied and identified in the NHTSA C8-02 investigation. Both of these conditions occur on the subject vehicle gear selection system, and are not a proposition of intentional positioning, but are the result of the design of the gear selection system that allows the positioning and the shift lever to remain in the false park position. *See* Tabs 1, 5, 6, 7, 8, 10, 21, 23, 24, 25, 34, 40.

32. Daimler Chrysler designed the subject vehicle gear selection system for manual positioning of the shift lever. Each gear selection position will either achieve a powered gear or neutral. When the gear selector lever is placed in reverse detent the transmission inner manual lever is designed to hydraulically engage clutches and bands in the transmission. Since the shift from reverse to park must transition from hydraulic pressure to shut off into neutral, there is a pressure shut off point. The gear selector lever mechanical linkage will position the internal automatic transmission hydraulic inner manual valve to engage the gear detent positions along with what are called hydraulic “bleed” points where the inner manual valve position transitions from fluid pressure to pressure shut off. Daimler Chrysler designed the bleed points into the gear selection system, and in the case of shifting from reverse toward park, the bleed point is uncontrolled and is between reverse and park. Each of these positions must be evaluated for gear selector positioning during the testing. The methodology I use to detect and evaluate the different gear selection positions is accepted, reliable, and valid by the scientific community and of a type reasonably relied upon by experts who practice in my field. *See* Tabs 1, 4, 6, 7, 8, 10, 12, 40, 56, 57, 58, 59.

33. In the course of my investigation of the gear selection system designed and manufactured by Daimler Chrysler for the 2002 Dodge Durango, I uncovered two malfunctioning systems – Key interlock system and Brake interlock system. First, the key interlock safety feature is regulated by the requirements of FMVSS 105 (see tab 16). Under the requirements of FMVSS 105, the only positions where the vehicle engine can be started by the ignition key are Park and Neutral. The subject vehicle can be started with the ignition key without the shift lever in locked park (on the land edge before park lock). In addition, the ignition key can be removed with the shift lever not in lock park. The fact that this defective condition is present on the subject vehicle is symptomatic of a loose cable between the shift lever and the transmission connection. The loose cable condition is a contributing factor to the shift lever position in the false park position. Second, the brake interlock safety feature is intended to lock the shift lever in locked park with the engine running. In the lock park position with the engine running, there is a lock pin actuated by a solenoid on the cable sheath that engages a slot in the cable and by design prevents shifting the shift lever without first placing the operators foot on the service brake. The subject 2002 Dodge Durango brake interlock safety feature malfunctions and does not prevent the operator from moving the shift lever out of lock park with or without the foot on the service brake pedal. The reason this defective condition is present is due to improper assembly of the solenoid housing that prevents the pin from engaging the cable slot. The fact that the solenoid housing connection is loose means that it some how became disconnected. Daimler Chrysler designed and manufactured the subject vehicle with the brake interlock safety feature (see tab 20). The area where the solenoid housing is located on the cable is guarded by a trim panel screw connected under the steering column. This area is maintenance free in terms of owner responsibility. There is no evidence of any repair to the subject vehicle

in this area, and there is no evidence of any repairs made by the owner. Either the subject vehicle brake interlock in the steering column was assembled incorrectly by the Daimler Chrysler supplier and then installed in the vehicle, or it separated during vehicle operation. The subject vehicle assembly plant information shows that it was an "early" production build. In my experience in over five Ford Motor Company "Job #1" assembly plant vehicle launches, it was not uncommon for assembly plant miss-builds to occur during the early launch phase. My opinion of the manufacturing defect is based upon my observation of the subject vehicle part condition, assembly plant experience, supplier plant audits, quality control surveillance, and assembly plant problem resolution. Lacking any information to the contrary, the defective condition of the brake interlock safety feature is a manufacturing defect that existed at the time the vehicle left the control of the Daimler Chrysler assembly plant. I have requested disassembly of the subject vehicle shift cable to further examine the condition of the loose solenoid housing. This information is of a type reasonably relied upon by experts who practice in my field. *See* Tabs 1, 4, 16, 23, 24, 25, 26, 45, 46, 52.

34. I defined for Daimler Chrysler the false park position in my report and deposition. There are many positions between park and reverse gear that are false park. The difference is the positioning of the shift lever on the land between park and reverse. In all false park positions, the shift lever can be positioned on the insert plate land, the shift lever will remain stationary in this position, the engine is disconnected from the transmission, and the vehicle will remain stationary in neutral idle. Traditional false park is a specific position where the shift lever can be positioned and remains stationary on the land between park and reverse, the transmission roller ball rests on the crest between park and reverse, the vehicle is stationary and in neutral idle, and the parking gear pawl is blocked on the land between parking gear engagement. In my evaluation

and testing of the subject vehicle, I could position the vehicle in the several false park positions defined above. The only position described by the automotive industry to the operator is "lock park", where the shift lever is placed in the park gate of the column insert plate and the shift lever must be raised to disengage it from this position. There is absolutely no confusion or misunderstanding that I provided the definition and description of these positions to Daimler Chrysler.

35. The above cited design and safety principles are valid, established, and accepted by experts who practice in my field. In addition, they have been tested, published in peer-reviewed articles, and their relative error measured against reliable standards, and are of a type reasonably relied upon by experts who practice in my field. Based upon the design and safety principles described above, my experience, qualifications, education, training, review of data for this case I have arrived at certain opinions and conclusions which are set forth in my report and deposition, attached hereto under Tabs 1 and 7, which report and deposition is incorporated by reference the same as if set forth fully herein.

Methodology and Testing in Support of the Design Alternative Opinions

36. Daimler Chrysler's motion alleges that my opinions of design alternatives are untested and unproven. My opinions identify several design alternatives that would have prevented the unattended subject vehicle from backing up in powered reverse. I will enumerate them as follows:

1. Proper functioning of the brake interlock system would have prevented the shift lever from movement into reverse in this incident due to inadvertent contact by the driver with the shift lever in a false park position. The brake lock safety feature would have prevented movement of the shift lever from lock park and from a false park position on the subject vehicle.

2. Design of a cable that does not flex at its bracket connections or become loose in service would eliminate the loose cable condition.
3. Design of a vehicle hydraulic valve body with controlled bleed points would eliminate the reverse bleed position in false park. Daimler Chrysler did not design the subject hydraulic with a specification to limit the bleed points. A specification to limit the bleed point to $\pm 1/8$ detent position would prevent bleed from the false park position.
4. Design of the automatic transmission with a tapered insert plate land toward the park lock gate, increased transmission roller detent spring force, and decreased shift lever land width would assist park lock automatic engagement, and "snap" the roller into park detent to lower the likelihood of positioning the roller on the false park crest.
5. A warning device on the insert land or neutral safety switch that illuminates a light on the instrument panel and an audible alert that the vehicle gear shift selector has not been positioned in lock park.

All of these design alternatives were investigated during the NHTSA C8-02 investigation by Ford Motor Company and the NHTSA. In fact, Ford Motor Company designed, manufactured, and tested; 1) a field kit for the warning system, 2) a tapered insert plate, 3) increased roller detent spring force, 4) specified a $\pm 1/8$ detent for the hydraulic bleed point, and 5) revised the shift lever insert plate engaging land.

I also designed a warning system described above in a products case in Texas for an automatic transmission that was functional and tested. In addition to the Ford Motor Company testing of these design alternatives, a buck was fabricated using the 2002 Dodge Durango gear selection system to test the production system and a second

buck was fabricated to test the tapered insert plate and increased force roller spring force. These bucks were made available to the defendants for inspection during the vehicle disassembly at the warehouse of Sico, White, and Braugh in Corpus Christi, Texas. Notably, the same defects are present on the production bucks with the exception of the brake interlock defect. There is no need to test the brake interlock system, because if it worked it would have prevented movement of the shift lever out of park lock and a false park position. Even so, tests on the bucks demonstrated that the brake interlock would have prevented shifting the lever from both park lock and a false park position. The method used for test and evaluation of the design alternatives are the same methods used by the automotive industry, and are not untested and unproven. This methodology is accepted, valid, and reliable and reasonably relied upon by experts who practice in my field. *See* Tabs 1, 4, 5, 6, 7, 9, 10, 12, 21, 23, 24, 25, 46.

37. As I explained in my report (Tab 1) and during my deposition (Tab 7), there are several feasible, practical, and economical designs that could have been integrated into the gear selection system design of a Dodge Durango to eliminate or reduce the probability of the hazard occurring. Testing by the automotive industry and the results from tests on the bucks and fixtures prove that it was technologically and economically feasible to incorporate the design alternatives and would have substantially reduced the risk of false park and sudden, unexpected vehicle rearward movement, such as was incurred by the Vetter 2002 Dodge Durango in this readily foreseeable raccident. As noted in my report and deposition, my opinions in this case regarding the defective condition of the gear selection system of the subject Dodge Durango is also based on other testing of substantially similar gear selection systems.

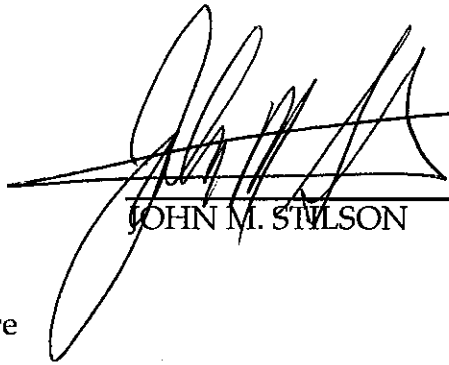
38. In my deposition, if asked, I would have explained to defense counsel that my design alternatives have been designed and tested on production and experimental vehicles to demonstrate the feasibility of preventing false park and vehicle park to reverse incidents. The creation of an alternative design does not necessarily involve the need to build a production prototype to establish feasibility. The engineers at Daimler Chrysler are capable of designing a gear selection system that would prevent park to reverse accidents, but they have not been directed to proceed toward accomplishing the objective under the Daimler Chrysler Safety Policy restrictions that such a design will not prevent injuries or deaths. The fundamental problem with the Daimler Chrysler design process is it being governed by its flawed internal safety policies. The stated Daimler Chrysler safety position to the NHTSA is that park to reverse accidents are due solely to driver error. *See* Tabs 8, 10.

39. One of the most important things to recognize is that this accident is a test of the subject vehicle to provide protection for the occupants. In fact, it is the ultimate test of the vehicle gear selection system to prevent catastrophic consequences to the users when the defects expose them to unreasonable risk of serious injury. In selecting the design process to meet the imposed safety objectives by Daimler Chrysler upper management, Chrysler engineers applied the requirements of the FMVSS and their internal specifications to design the 2002 Dodge Durango gear selection system, and elected not to conduct any testing or specification of the false park as a design requirement. The performance of the subject vehicle gear selection system in this park to reverse accident established the inadequacy of the gear selection system to provide protection and the application of a proper hazard and failure mode analysis would have established the defective condition of the gear selection system design. Basically, the Daimler Chrysler design process is flawed by the safety objectives that govern it. As

a result, comparison of the Daimler Chrysler safety objectives with the Hazard Prevention Safety Standard results in violation of their obligation to eliminate the hazard and guard or protect the user from the hazard. This opinion is supported by my hazard prevention and failure mode analysis along with other supporting information and basis. Daimler Chrysler had the technology, knowledge, and capability to have selected safety objectives and a design process that would have applied testing criteria in evaluating the performance of the gear selection system prior to the production of this vehicle, but chose to pass on the risk of serious injury to the customer when an accident occurred. *See* Tabs 12, 13, 14, 26, 66.

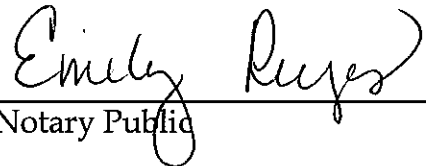
40. In summary, I have applied valid, accepted, and reliable methodology and techniques in arriving at my opinions. During my industrial experience covering 15 years and in my independent consulting work spanning 24 years, I have used my talents and skills to conduct investigations into allegations of potential product liability claims, and have used the technique and methodology of failure analysis and hazard analysis before arriving at my opinions. It has been my practice to keep abreast of the technological advances in accident investigation, to evaluate advances in the automotive industry design process, and to follow the advances made in the scientific community. My investigative work in this case is demonstrative of the effort to thoroughly analyze, evaluate, and study the subject vehicle performance under the conditions of this accident before arriving at my opinions. I have had several motions by automotive manufactures involved in product liability lawsuits in an attempt to exclude my testimony under similar allegations of lacking qualifications and reliability. No court has ever found me to be unqualified to testify or that my methodology or techniques are unreliable for reasons that are attributed to me. *See* tab 47.

FURTHER AFFIANT SAYETH NOT.



JOHN M. STILSON

SUBSCRIBED AND SWORN TO before
me this 7th day of November 2005.



Notary Public

